BROOKHAVEN NATIONAL LABORATORY

Work Permit # DRL-2006-004
Work Order # _____
Job# _____ Activity# _____

1. Work requester fills out this section. ☐ **Standing Work Permit**

Requester: Don Lynch	Date: 06/30/06	Ext.: 2253	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): S. Marino			Ext.: 3704
Work Control Coordinator: Don Lynch		Start Date: 07/05/06	Est. End Date: 10/15/06
Brief Description of Work: BBC North and South Repairs			
Building: 1008	Room: IR	Equipment: n/a	Service Provider: PHENIX

2. WCC, Requester/Designee, Service Provider, and ES&H (as necessary) fill out this section or attach analysis

ES&H ANALYSIS				
Radiation Concerns	☒ None	☐ Activation	☐ Airborne	☐ Contamination	☐ Radiation
Radiation Generating Devices:	☐ Radiography	☐ Moisture Density Gauges	☐ Soil Density Gauges	☐ X-ray Equipment
☐ Special nuclear materials involved, notify Isotope Special Materials Group			☐ Fissionable materials involved, notify Laboratory Criticality Officer	
Safety Concerns	☒ None	☐ Ergonomics	☐ Transport of Haz/Rad Material	
☐ Adding/Removing Walls or Roofs	☐ Confined Space*	☐ Explosives	☐ Lead*	☐ Penetrating Fire Walls
	☐ Corrosive	☐ Flammable	☐ Magnetic Field*	☐ Pressurized Systems
☐ Asbestos*	☐ Cryogenic	☐ Fumes/Mist/Dust*	☐ Material Handling	☐ Rigging/Critical Lift
☐ Beryllium*	☐ Electrical	☐ Heat/Cold Stress	☐ Noise*	☐ Toxic Materials*
☐ Biohazard*	☐ Elevated Work*	☐ Hydraulic	☐ Non-ionizing Radiation*	☐ Vacuum
☐ Chemicals*	☐ Excavation	☐ Lasers*	☐ Oxygen Deficiency*	☐ Other
* Does this work require medical clearance or surveillance from the Occupational Medicine Clinic? ☐ Yes ☒ No				
Environmental Concerns		☒ None	☐ Work impacts Environmental Permit No.	
☐ Atmospheric Discharges (rad/non-rad)		☐ Land Use	☐ Soil Activation/contamination	☐ Waste-Mixed
☐ Chemical or Rad Material Storage or Use		☐ Liquid Discharges	☐ Waste-Clean	☐ Waste-Radioactive
☐ Cesspools (UIC)		☐ Oil/PCB Management	☐ Waste-Hazardous	☐ Waste-Regulated Medical
☐ High water/power consumption		☐ Spill potential	☐ Waste-Industrial	☐ Underground Duct/Piping
Waste disposition by:				☐ Other
Pollution Prevention (P2)/Waste Minimization Opportunity:		☒ None ☐ Yes		
FACILITY CONCERNS	☒ None			
☐ Access/Egress Limitations	☐ Electrical Noise	☐ Potential to Cause a False Alarm		☐ Vibrations
	☐ Impacts Facility Use Agreement		☐ Temperature Change	☐ Other
☐ Configuration Control	☐ Maintenance Work on Ventilation Systems		☐ Utility Interruptions	
WORK CONTROLS				
Work Practices				
☐ None	☐ Exhaust Ventilation	☒ Lockout/Tagout	☐ Spill Containment	☐ Security (see Instruction Sheet)
☒ Back-up Person/Watch	☐ HP Coverage	☐ Posting/Warning Signs	☐ Time Limitation	☐ Other
☐ Barricades	☐ IH Survey	☐ Scaffolding-requires inspection	☐ Warning Alarm (i.e. "high level")	
Protective Equipment				
☐ None	☐ Ear Plugs	☐ Gloves	☐ Lab Coat	☐ Safety Glasses
☐ Coveralls	☐ Ear Muffs	☐ Goggles	☐ Respirator	☒ Safety Harness
☐ Disposable Clothing	☐ Face Shield	☐ Hard Hat	☐ Shoe Covers	☒ Safety Shoes ☐ Other
Permits Required (Permits must be valid when job is scheduled.)				
☒ None	☐ Cutting/Welding	☐ Impair Fire Protection Systems		
☐ Concrete/Masonry Penetration	☐ Digging/Core Drilling	☐ Rad Work Permit-RWP No		
☐ Confined Space Entry	☐ Electrical Working Hot	☐ Other		
Dosimetry/Monitoring				
☒ None	☐ Heat Stress Monitor	☐ Real Time Monitor	☐ TLD	
☐ Air Effluent	☐ Noise Survey/Dosimeter	☐ Self-reading Pencil Dosimeter	☐ Waste Characterization	
☐ Ground Water	☐ O_2/Combustible Gas	☐ Self-reading Digital Dosimeter	☐ Other	
☐ Liquid Effluent	☐ Passive Vapor Monitor	☐ Sorbent Tube/Filter Pump		
Training Requirements (List below specific training requirements)				
PHENIX Awareness, LockOut/TagOut affected, Working at heights, man lift training				
Based on analysis above, the Walkdown Team determines the risk, complexity, and coordination ratings below:			**If using the permit when all hazard ratings are low, only the following need to sign: (Although allowed, there is no need to use back of form)**	
ES&H Risk Level:	☒ Low ☐ Moderate ☐ High		WCC:	Date:
Complexity Level:	☒ Low ☐ Moderate ☐ High		Service Provider:	Date:
Work Coordination:	☒ Low ☐ Moderate ☐ High		Authorization to start	Date:
			(Departmental Sup/WCC/Designee)	

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, and personnel availability need to be addressed): All work is skill of the craft for PHENIX technicians and BBC collaboration experts. No special training or procedures are required as this effort has been performed periodically during previous maintenance periods without special procedures and/or planning without any unanticipated difficulties. Work will be continuously monitored by PHENIX lead technicians and cognizant engineer(s) for unexpected events/conditions/etc. which might require additional planning and/or coordination in which case efforts will be halted until appropriate planning and approvals are in place.
Special Working Conditions Required: No
Operational Limits Imposed: No
Post Work Testing Required: No

Job Safety Analysis Required: ☐ Yes ☒ No	Walkdown Required: ☐ Yes ☒ No

Reviewed by: Primary Reviewer will determine the size of the review team and the other signatures required based on hazards and job complexity. Primary Reviewer signature means that the hazards and risks that could impact ES&H have been identified and will be controlled according to BNL requirements.

Title	Name (print)	Signature	Life #	Date
Primary Reviewer				
ES&H Professional				
Other				
Other				
Work Control Coordinator	Don Lynch		20146	1/20/06
Service Provider				
	Review Done: ☐ in series	☐ team		

4. Job site personnel fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments).			
Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:
Workers are encouraged to provide feedback on ES&H concerns or on ideas for improved job work flow. Use feedback form or space below.			

5. Departmental Job Supervisor, Work Control Coordinator/Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)			
Name:	Signature:	Life#:	Date:

6. Departmental Job Supervisor, Work Requester/Designee determines if Post Job Review is required. ☐ Yes ☐ No

Post Job Review (Fill in names of reviewers)			
Name:	Signature:	Life#:	Date:
Name:	Signature:	Life#:	Date:

7. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)
a) WCM/WCC: Is any feedback required? ☐ Yes ☐ No

b) Workers: Are there better methods or safer ways to perform this job in the future? ☐ Yes ☐ No

8. Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of work area to work supervisor)

Name:	Signature:	Life#:	Date:
Comments:			

Lynch, Don

From: Lynch, Don
Sent: Friday, September 15, 2006 12:06 PM
To: Giannotti, Paul
Cc: Marino, Salvatore F; O'Brien, Edward; Haggerty, John; Woody, Craig
Subject: Procedure for moving CM and carriages
Attachments: PP_2_5_5_1_01_A.pdf

Paul,

At our meeting yesterday with PHENIX engineering and management concerning a power cable which was abraded due to contact with CM carriage rollers during a coordinated move of the CM, the following conclusions and action items were formulated:

Conclusions:

1 The incident occurred during a planned move of the CM as a part of maintenance and repair efforts for the BBC.
2 These efforts had been appropriately planned under work permit DRL-2006-004.
3 Movement of the CM is authorized by that permit and the procedure for moving the CM is detailed in standard PHENIX operating procedure No. PP-2.5.5.1-01, Rev. A issued 5-20-99.
4 All requirements of this procedure were adhered to by the PHENIX technicians, and the technicians involved followed safe and appropriate procedures to immediately establish a safe environment, evaluate the equipment involved and communicate the incident to appropriate PHENIX engineering and management.
5 PHENIX engineering and technical staff determined that a single power cable was involved, initiated both disposition of the equipment involved (repaired the abraded cable) and appropriate corrective action to prevent recurrence of the incident (redressed the cable slack and junction box location to prevent a repeat of this incident during future CM moves)
6 It was also concluded that the complexity of electrical, optical, water and gas systems adjacent to and connected to the CM has increased dramatically with the addition of several new detectors in the CM and the addition of the “Bridge” above the CM. The PHENIX operating procedure for moving the CM should be reviewed and revised as appropriate to ensure that this issue is appropriately addressed.
7 It was concluded that the incident did not involve personal injury, significant equipment damage nor the potential risk for such injury or damage as to warrant generation of an incident report beyond the organizational level. This memo shall be attached to work permit DRL-2006-004 as part of the work permit closeout documentation.

Action Items

1. Review PHENIX operating procedure No. PP-2.5.5.1-01 and update/revise as necessary. (Don & Paul).

2. Document findings in work permit DRL-2006-004 closeout.

Attached please find a copy of the PHENIX procedure for moving the CM and the carriages. I read it over and it seems to have been adequate in all respects in the past and remains adequate for moving the EC and WC between their 2 normal positions, but requires some improvements due to recent changes in the CM which have increased complexity of equipment, fluid lines, power, signal and optical cables traversing this structure. Specifically, I would note the following:

1. Paragraph 3.2 calls for a hydraulic operator plus 2 technicians. I believe that we should revise this section to indicate a hydraulic operator plus 4 technicians when moving the CM. For the EC and WC Operator and 2 techs are adequate.

2. Because of recent changes to the way certain cables and hoses are routed in the CM, we need to add to the procedure instructions on which cables and hoses need to be disconnected prior to moving the CM and how to ensure that the disconnected items are appropriately secured to prevent damage during move operations.

3. This procedure does not include moving the South Magnet. I do not know of a separate procedure for moving the South magnet and it seems this procedure would be an appropriate place to include that operation.

4. This procedure does not address moving the EC (nor MS, WC and CM) from the IR to the AH. I am not sure whether separate procedures exist for those tasks; if not we should create appropriate procedures.

5. The procedure does not adequately address the fact that the MMS needs to be restrained in order to move the CM (and conversely the CM needs to be restrained to move the MMS (this is hinted at in paragraph 5.3 but should be described in greater detail.

As a general comment concerning PHENIX procedures in general, I believe we should undertake a review of all PHENIX procedures and update, revise, consolidate, retire, etc. procedures so that we have appropriately documented all PHENIX documents and standards. This would be a good project for during the next run, and we would solicit significant input from our engineers and techs, and the rest of the PHENIX collaboration as appropriate.

Regards,

Don Lynch